Impact of Money Market Funds on Commercial Paper Markets in United States and South Korea

By

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Master of Science in Management Studies

ABSTRACT

The focus of this study is on Commercial Paper markets which are used by financial and non financial firms to manage working capital and maturity transformation. We explore how the primary investors in CP in the US, the Money Market Mutual Funds (MMMFs) have influenced the markets. We see how CP usage has changed post the advent of MMMFs and how they have grown with growth in MMMFs assets. We also try to understand what made MMMFs in the US successful and what has led to their tremendous growth. We then move on to study South Korean CP markets and try to see if there are similar characteristics emerging in the markets with the establishment of short term money funds. South Korea gives a window into Asia to judge if it would be prudent for Asian countries to adapt from the US market structure to spur the CP markets locally. With the tremendous growth taking place in emerging Asia, the requirement for short term capital markets is growing and hence the importance of adapting from successful markets.

We do see from the study that post MMMFs establishment there is a greater use of CP among business in both economies. There is also a greater holding of CP as assets by firms in the economy. MMMFs tend to hold large volumes of CP and may have led to greater CP market access for firms. Liquidity, yield and safety come out as the vital characteristics which make MMMFs a preferred investment conduit for money market instruments.

Thesis Supervisor: Jun Pan
Title: School of Management Distinguished Professor of Finance

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TABLE OF CONTENTS

MONEY MARKETS

Money markets refer to the market for short term lending and borrowing. The instruments traded have original maturities less than 1 year. These securities have short maturities and are highly liquid, so a close proxy for money and hence the name. The Money markets provide a wide variety of choices to participants to save and invest money, yet keeping it liquid. They form a market place between the short term borrowers and lenders in an economy.

The participants in the money markets can be divided into borrowers or the 'issuers' of the short term debt instruments, the investors who are the consumers of this debt and provide the capital to the borrowers and the intermediaries who facilitate this exchange of capital between the issuers and the investor. Investors can place their surplus capital in highly liquid, relatively price stable assets to earn returns. The borrowers can use these markets as a source of short term funding to bridge cash flow mismatch. The intermediaries by facilitating these transactions make fee and management income.

Market Participants

The Issuers:

- State and Local governments
- Central banks like US Federal reserve
- Governmental Agencies (GMAC, Fannie Mae, Freddie Mac)
- Commercial banks and depository institutions
- Finance Companies like leasing companies
- Broker Dealers
- Non-Financial Corporations
- Conduits (backed by Investment banks, hedge funds)

The Investors:

- Most of the issuers also invest if they have cash surplus
- Pension funds and Insurance companies
- Households or Retail investors
- Non Profit organizations

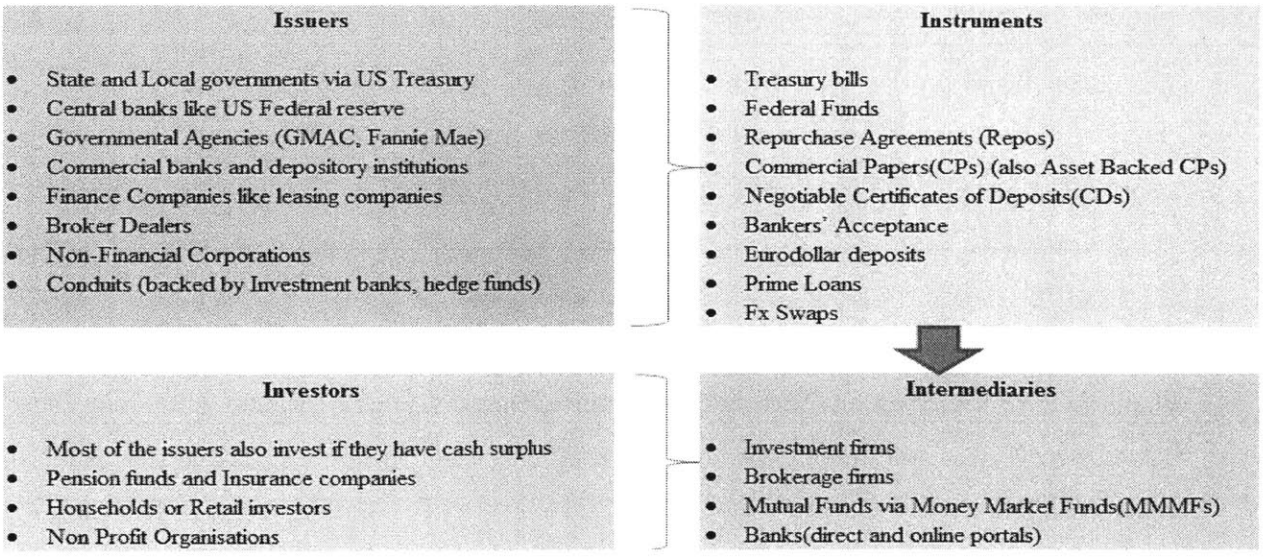
The Intermediaries:

- Investment firms
- Brokerage firms
- Mutual Funds via Money Market funds(MMFs)
- Banks(direct and online portals)

Various instruments are available in the money markets. The availability of instruments varies with the level of advancements of markets. Some of most commonly available ones are:

- Treasury bills
- Federal Funds
- Repurchase Agreements (Repos)
- Commercial Papers(CPs) (also Asset Backed CPs)
- Negotiable Certificates of Deposits(CDs)
- Bankers' Acceptance
- Eurodollar deposits
- Prime Loans
- Fx Swaps

Figure 1



*Source: Investment Company Institute (Modified)

Why are Money Markets needed?

The need for money market arises from the need of both the issuers and the investors to lend and borrow money in the short term. Ideally a banking system should be able to satisfy this need for short term financing and returns. But banks are highly regulated and have a cost to their services. Money markets can offer cheaper alternative. Banks have to adhere to reserve requirements which make them costly and inefficient to many borrowers. In spite of the better credit information with banks the costs and scale makes them expensive as a funding source. The various regulatory restrictions make the returns offered by banks not very attractive. The establishment of a market place for funds has made the movement of funds much more efficient and hence cheaper. There are wider participants with newer innovations and the market has given access to retail investors to invest their money for short term with better returns. This has also increased the liquidity available in the system and spread the risk.

To various participants they provide different functions:

- Governments: funding short term expenditures mismatched to tax revenues
- Corporations: working capital, M&A
- Banks: short term reserve requirement, short term asset financing
- Agencies, credit card firms: payables, extend lines, manage interest rate risks, rebalance portfolios
- Households a way to invest in safe, liquid yet high return instruments thus adding to market liquidity. Money market funds and their growth due to interest rate cap regulation is an example of market innovation to circumvent the cap regulations. The Cap still remains for corporate entities, so investing in money markets is a better way to make their excess funds earn higher returns for them.
- Federal Reserve: Fed Funds to control monetary policy transmission. In a flexible currency environment, having high mobility, it is difficult to control money growth so with the growth of financial innovations the central banks have moved from traditional quantum controls to price channels to control inflation (price stability) in the economy. As the signaling is done using short term interest rates, the money markets are vital to efficient transmission along the financial marketplace.

A fractional banking system is not structured to perform all these functions so money markets have grown and they have been aided by and have also facilitated economic activity.

US MONEY MARKETS

The US has the largest and most active money market in the world. Most of the market participants are present and deal in a variety of instruments. The development of Asset backed commercial paper in 1990s as an instrument lead to huge volume growth in money markets in the US. Though the ABCP market has shrunk considerably, post the financial crisis of 2008. The size and growth of the market can be seen from the volume outstanding of securities forming the money markets. (Figure 2)

Changes in the US which created Money Market growth

Issuer or Borrower need has been one of the drivers for growth in money markets. As US corporations and financial institutions grew, their demand for short term financing grew. US governmental spending also required funding which added to the need for short term financing. These needs increased the demand for US treasuries, CPs, CDs and prime loans. As trade became international and markets around the world opened up, the need came for instruments like Bankers' Acceptance to safeguard from credit risk of foreign firms and has evolved to Eurodollar markets and Fx Swaps. Repos, ABCPs and newer instruments have further deepened the market.

A major change came with new lenders or investors who have joined the money markets. The growth of money market mutual funds in the late 1970s to their present dominance of the money market has made a significant impact to the market structure. The channel of money market funds as an investment vehicle has deployed huge volumes of retail and corporate money which has deepened and made markets more efficient.

Technology has also played a crucial part by facilitating auto sweeps of bank surplus funds into money markets, easy online portals giving investors volumes of information for seeking higher returns on short term funds and access to investment channels.

Figure 2

Snapshot of US Money Market Instruments and MMMFs Total Assets (in $ Billions)

Year	All CP	CP Financial	CP Non Financial	ABCP	T Bills	Repos	MMMF Assets
1973	41.07	32.69	8.38		100.10		
1974	49.14	36.45	12.51		105.00		2.38
1975	47.69	37.52	9.62		128.60		3.70
1976	52.04	39.71	11.05		161.20		3.69
1977	63.88	49.22	12.81		156.10		3.89
1978	82.24	63.86	15.50		160.90		10.81
1979	110.89	81.82	24.52		161.40		45.21
1980	121.60	86.62	28.03		199.80		76.42
1981	161.11	107.56	42.72		223.40		186.31
1982	161.83	109.16	37.61		277.90		219.93
1983	183.50	125.18	36.78		340.70		179.47
1984	231.72	145.51	58.49		356.80		232.20
1985	293.91	187.78	72.21		384.20		242.41
1986	326.14	225.87	62.87		410.70		290.58
1987	373.59	258.57	73.77		378.30		313.78
1988	451.76	316.14	85.68		398.50		335.02
1989	521.86	351.72	107.11		406.60		424.74
1990	557.81	365.61	116.85		482.50		493.32
1991	528.13	347.55	98.48		564.60		534.97
1992	545.14	359.62	107.11	46.86	634.30		539.47
1993	553.76	367.13	117.83	51.56	658.40		559.65
1994	600.07	418.16	139.24	63.95	697.30		600.13
1995	677.74	464.23	157.35	101.24	742.50		741.29
1996	779.37	555.48	156.41	146.69	761.20	973.70	886.65
1997	958.52	724.84	168.60	256.15	701.90	1158.99	1042.53
1998	1161.02	895.19	192.96	381.80	637.60	1414.02	1327.92
1999	1393.85	1074.35	230.33	520.79	653.20	1360.95	1579.59
2000	1606.06	1206.74	278.40	645.83	616.20	1439.60	1812.13
2001	1469.23	1093.03	177.73	697.40	734.90	1786.50	2240.58
2002	1370.29	993.25	119.81	693.10	868.30	2172.43	2223.89
2003	1288.57	929.99	82.48	678.50	918.20	2355.70	2016.37
2004	1395.04	951.91	97.78	714.10	961.50	2868.23	1879.85
2005	1640.10	1166.08	90.07	886.90	914.30	3288.40	2006.86
2006	1957.52	1362.68	112.52	1125.30	911.50	3388.40	2312.14
2007	1788.09	1251.27	123.82	831.80	958.10	3874.86	3033.06
2008	1599.30	1125.85	131.48	704.50	1489.80	3914.80	3757.26
2009	1137.38	677.63	58.41	451.60	1992.50	2568.76	3258.30
2010	1057.45	575.89	82.93	377.80	1788.50	2652.09	2755.35
2011	1004.44	527.34	124.69	349.80	1477.50	2745.00	2578.45

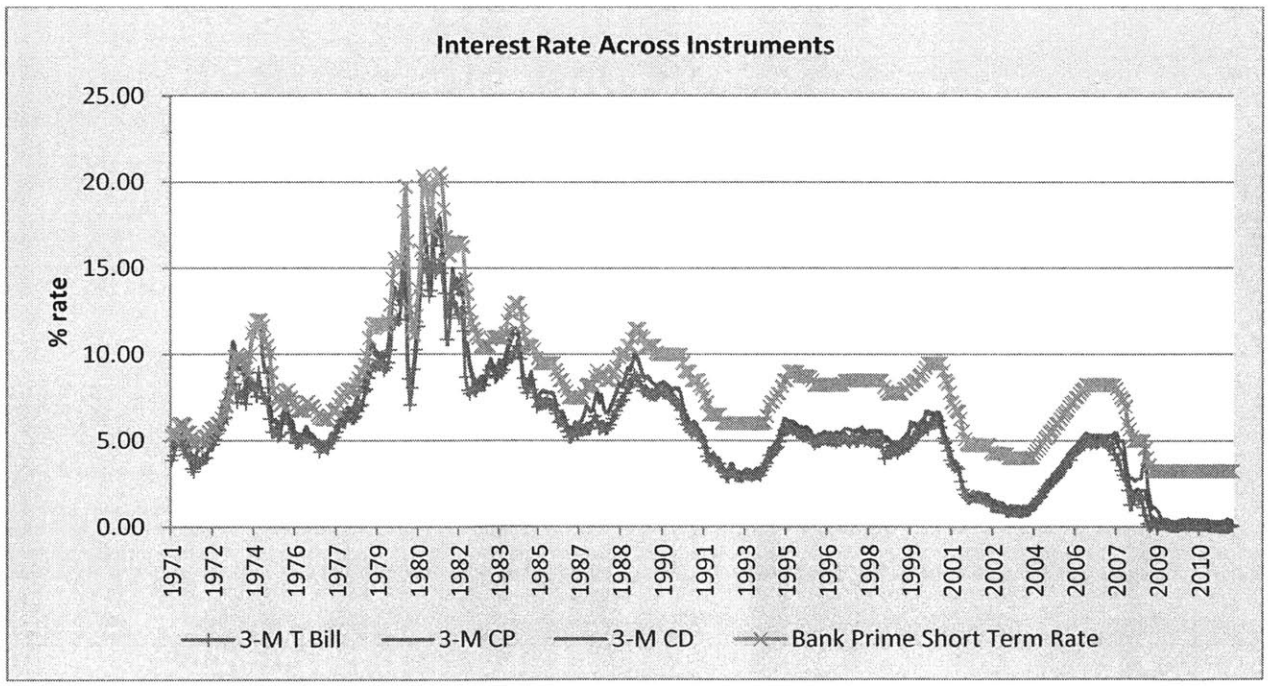
Source: Table B-87, Department of the Treasury, Table L-208, US Flow of Funds (Federal Reserve), Source: SIFMA, Financing by US Government Securities Primary Dealers

Regulatory and policy changes have also galvanized the money markets. Cap on deposit interest rates in 1950s gave impetus to move money from low efficiency bank setups. Fed funds as a clear monetary policy tool made money markets the gateway for the changes to transmit on to derivatives and other asset classes specially fixed income assets.

Also the growth of USD as the reserve currency of the world post the Breton Woods system has attracted a lot of funds from world over into dollar money markets. This has aided US firms and corporations to get their funding from a huge investor base and the liquidity in the system is unparalleled to any other nations' market.

The volumes outstanding of some of the key instruments in the US money markets are indicative of the depth and liquidity. Pricing of various money market instruments also seems to have lower volatility and specifically the cost of issuing CP/CD compared to bank prime rate has reduced significantly from the late 80s. (Figure 3)

Figure 3

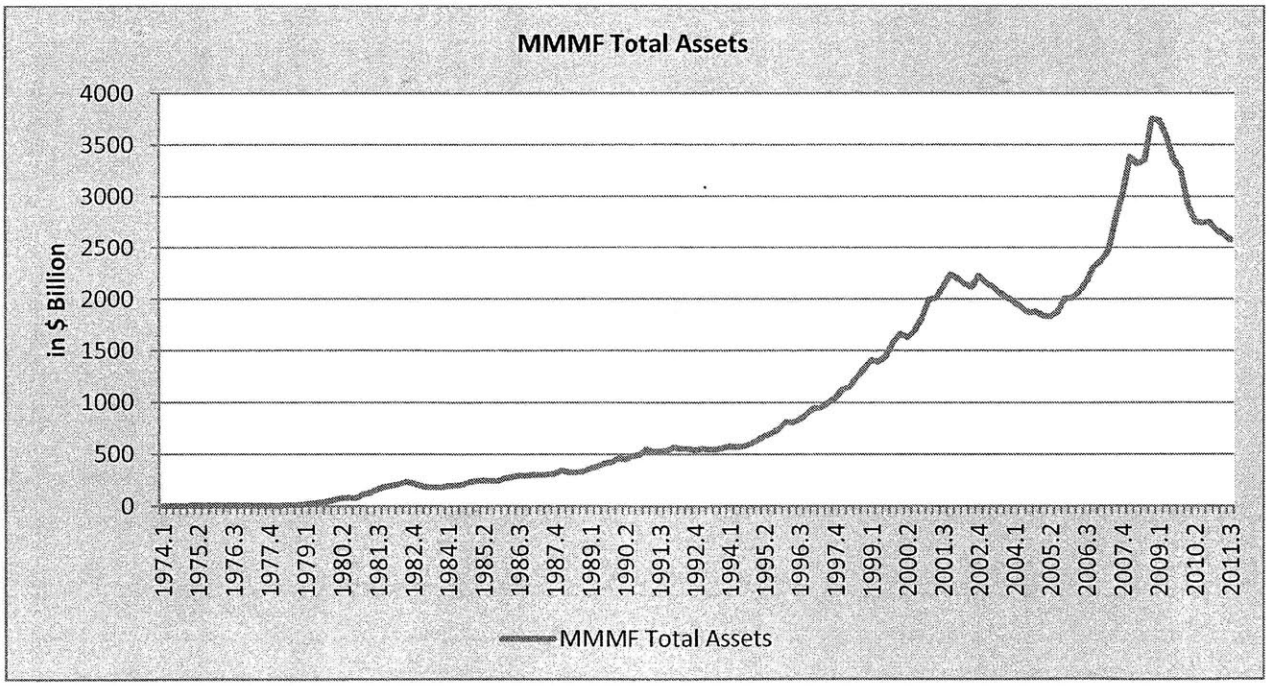


Source: Table H-15, Federal Reserve

MONEY MARKET MUTUAL FUNDS (MMMF): A VEHICLE FOR GROWTH IN US MONEY MARKETS

Money market mutual funds are funds which invest in high quality short term money market instruments to provide investors highly liquid, relatively safe and higher returns. These funds are mostly backed by the fund complexes which run them and are thus extremely safe. The MMMFs were a development of market innovation when there was a cap on interest rates paid by banks to retail and corporate investors in the US. MMMFs were created to offer investors higher returns on their short term excess capital. They have grown to become the most important investment channel and are vital to the US money markets. The MMMFs invest heavily in various money market instruments. They are some of the largest investors in Commercial Paper, ABCP, and repo markets. The main holdings have been CPs which has remained around 30% of MMMF assets. Repo and Fed Funds also makes up 20 % of the holdings. Thus they are critical to the liquidity of the financial markets and almost serve as the lubrication in the system. The impact of the sudden liquidity crisis in 2008 via redemptions in MMMFs gives an indication of their importance. They are structured to maintain a NAV of $1 and can be invested and redeemed at very short notice.

Figure 4



Source: Table L-121, US Flow of Funds (Federal Reserve)

Liquidity, Yield and Safety

MMMFs have been critical to growth of many financial instruments by channeling investments from households and corporate firms. This has been very important for the US economy as there is a limit to the lending ability of banks in a fractional banking system. Funds can be generated via equity issuance, bond offering or bank loans. A distinction needs to be made on short term funding needs and long term investment funding. The equity and bond markets help firms raise capital targeted at more long term needs. But it is equally important for firms to have access to short term capital to manage working capital needs. A liquid market needs to be available for firms with capital need to borrow from and for firms with excess capital to invest and earn returns. Banks were traditionally the source for such funding for firms. But banks are restricted by the amount of available deposits and their balance sheet which determine their ability to lend. The deposit base of the banking system also goes through changes. As economies grow and people get more stable incomes and lifestyles, the saving tendencies have been seen to reduce. The US has moved from being a high savings economy to one where people save 4-5% of their income. This deposit base is not sufficient to sustain the needs of growing firm demand of capital. Similarly the banking system in the absence of real competition gave lesser returns on capital deposited with them. This situation gets accentuated when interest rates in the economy rise but banks do not compensate their depositors adequately.

MMMFs came into being to address this basic gap in the market. Their growth got accelerated in the high interest rate environment of the 1970s. They were extremely safe and returned more than T Bills by investing in money market instruments like CPs/CDs. (Figure 5.1, 5.2)

The main factors that contributed to their growth as compared to the bank deposits and other investing options were the liquidity, excess yield and safety they offered. The wider access to households via smaller unit investments and exposure to money market instruments was also a contributing factor to MMMFs having a large retail investor base.

MMMFs were extremely liquid as investors could invest and redeem units at will. MMMFs invested in high quality short term paper and the repo market and hence could service redemption requests with ease. The yield offered by MMMFs was closely tied to the short term interest rates in the economy and was completely passed on to the investors. This was significantly more than those offered by bank deposits which were initially capped by regulation and even when they were relaxed the banks did not

Figure 5.1

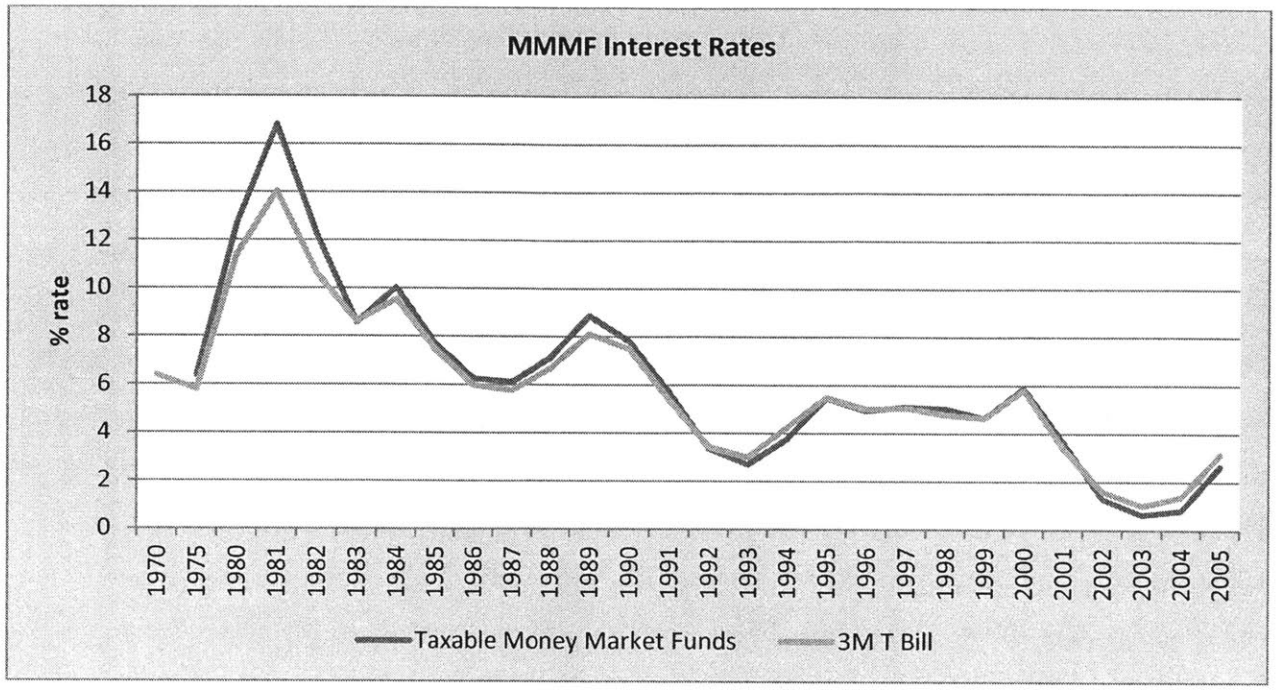
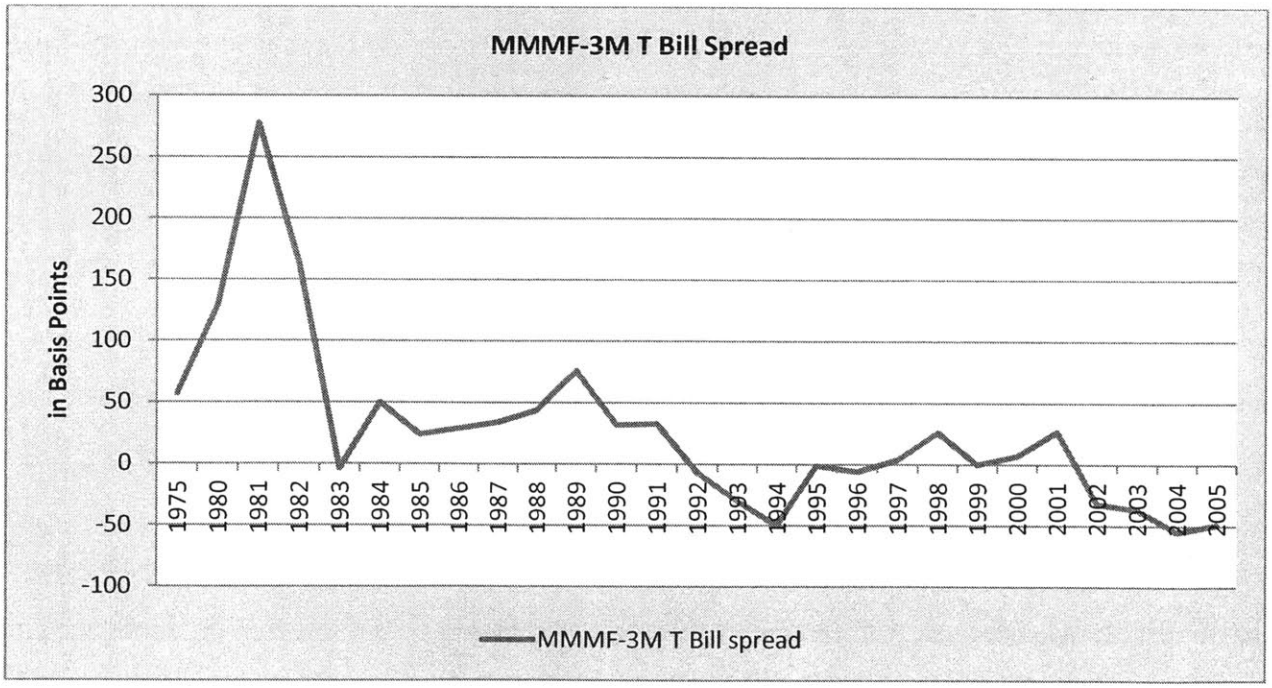


Figure 5.2



Source: Table 1178. Money Market Interest Rates and Mortgage Rates: 1970 to 2005

offer competitive returns to deposit holders. Corporate deposits were still subject to caps which prompted them to park their capital with MMMFs.

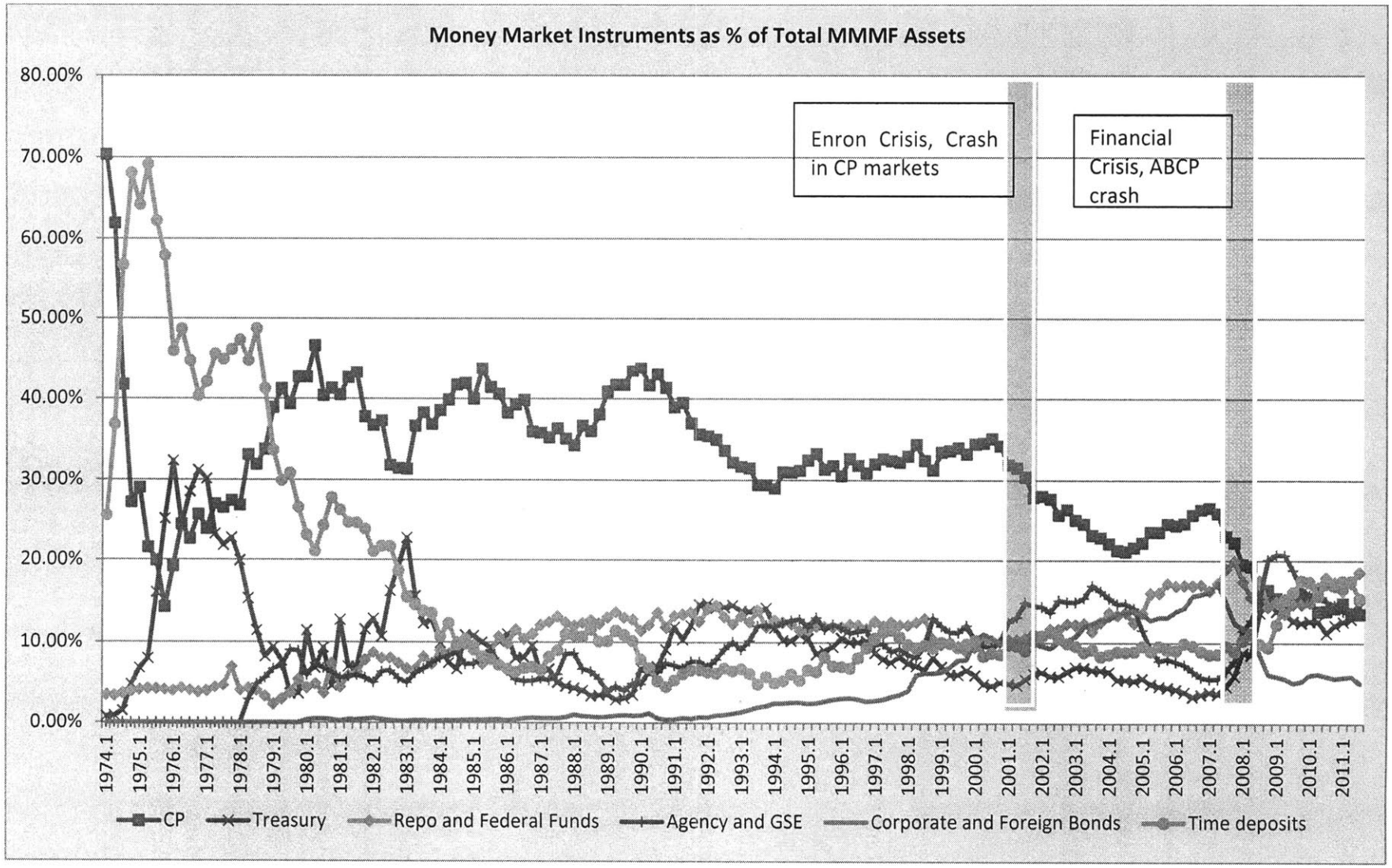
The safety of MMMFs was high as these funds were generally backed by the fund complexes that set them up. This was a better option compared to getting direct exposure to CP or repo markets which did not give the same level of backing. It also scored over the guarantee of bank deposits as there was a cap to the amount that was backed but with MMMF investments the fund backed the entire investment.

Thus MMMFs are an important market channel for investing in money market instruments and hence are also critical for the robust growth of the money market. (Figure 2) They can serve as a catalyst for increasing the depth and liquidity of money market instruments.

MMMF Portfolio Composition and Trends

The impact of MMMFs on money markets can be gauged by their portfolio holdings of instruments over time. (Figure 6) They hold significant volumes in most securities and are vital to the market structure. Initially MMMFs were invested in CPs, treasuries and time deposits. The main motive for CP holdings was to enhance yield to investors while maintaining the liquidity and safety. This gradually led to drop in investments in time deposits and a stabilization of CP held. This has impacted the CP market as MMMFs are the largest investors in the CP market. Through the mid 80s to early 2000 the major holdings were CPs, with 10%-15% held in most of the other major instruments. The Enron crisis in 2001 was a significant event in the CP market and the MMMFs reacted immediately. The safety of their investments is a very important criterion for MMMFs hence they pull out of the unsafe instruments at the first instance. This was clearly seen in 2001 as the volumes of CP held by MMMFs went down significantly. There was also a collapse in CP markets in general, which signifies the importance of MMMF support to these markets. There was build up in holding of agency backed paper like ABCP during the early 2000s. The 2008 crisis led to the collapse of the ABCP markets and the MMMFs were again the first to pull out drastically from the markets. They subsequently increased their holdings of safe assets like treasuries and time deposits. There is now a highly diversified portfolio, post the crisis, than any time previously. This may be due to the lack of clear confidence in the markets by MMMFs. These adjustments which MMMFs make to their portfolios define their focus on liquidity, yield and safety. Thus MMMFs seem to act like a barometer for measuring the safety perception of the market as they are invested in CPs during safe times and pull out significantly at the perception of risk in the markets.

Figure 6

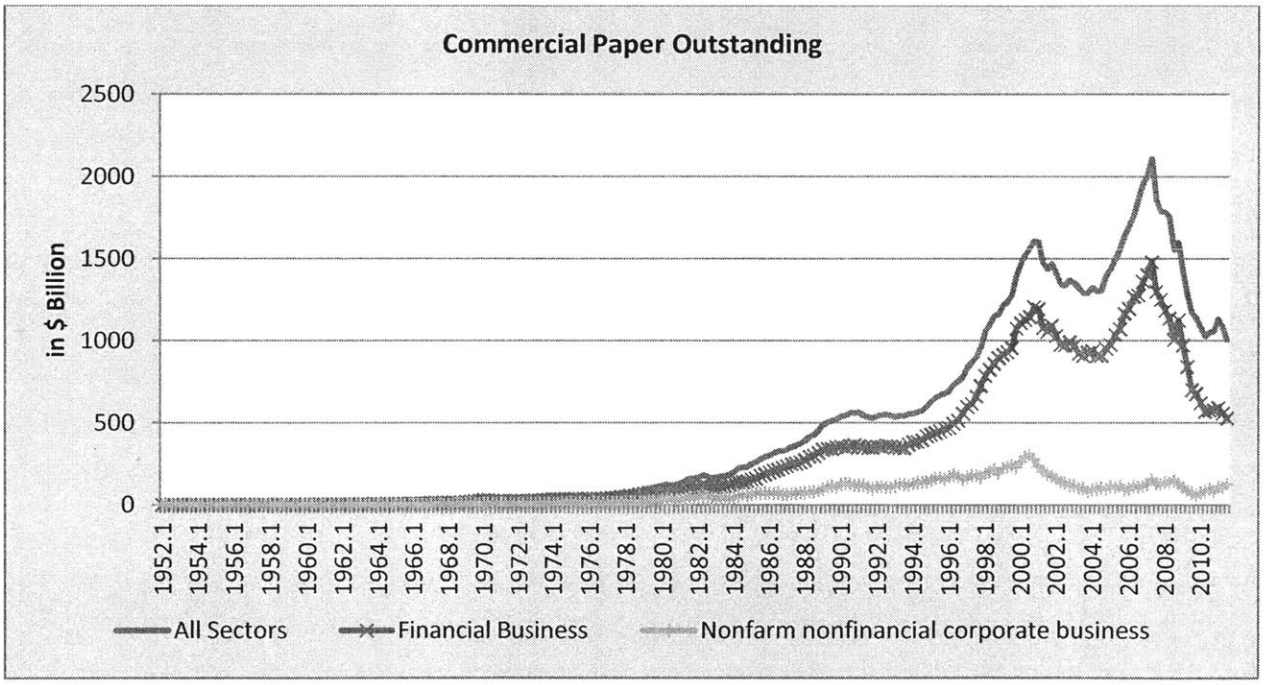


Source: Table L-121, US Flow of Funds (Federal Reserve) & Author's Calculation

IMPORTANCE OF COMMERCIAL PAPER MARKETS

The commercial paper is a money market instrument having maturity up to 270 days. They are one of the largest money market instruments by volume. (Figure 2, Figure 7) Issued by both financial and non financial firms to finance their short term financing, it is unsecured and hence has minimum registration/regulatory requirements. The primary backing for the paper is the credit quality of the issuer and market perceived ability of earnings to service the borrowings. Most of the issuers have high credit ratings and hence the CP serves as very good instruments for MMMFs to invest for greater returns. MMMFs thus hold large proportions of the CP volumes and hence understanding their impact on the CP market is of interest.

Figure 7



Source: Table L-208, US Flow of Funds (Federal Reserve)

MMMF AND THEIR IMPACT ON US COMMERCIAL PAPER MARKET

Depth and Liquidity in CP markets by MMMFs

We shall focus on the impact of MMMFs in Commercial Paper market. MMMFs have been the largest investors in CPs from early periods of their setup. This has lead to firms getting access to the large pools of capital to fund their short term needs. The significant growth in the CP market coincides with the emergence of MMMFs in the US market. MMMFs became a vehicle through which excess capital in the household and corporate sector could get invested in short term, high quality safe instruments. The regulatory need for MMMFs to invest in highly liquid and paper of high quality played very well for tapping into the CP market. Holdings have been growing in terms of absolute levels and have remained about 35% of MMMFs total assets. (Figure 8.1, 8.2) CP issuers are mostly firms with very high quality rating and the need for short term capital of these firms is significant and sustained E.g. General Electric. Thus MMMFs could invest in these instruments to earn more than parking in fed funds or bank deposits and offer better returns to their investors. The CP issuers in turn were able to access large pools of capital at lower costs than the bank lending that had been previously the only source of short term financing available to them. This increased the efficiency of capital allocation. Cost of CP issuance has also declined as can be seen from the spread of CP to T Bills. (Figure 9) An important consideration of these markets and the significant holding of MMMFs is the flight which happens when quality scare events happen. Two significant occasions when the CP market collapsed as the primary investors the MMMFs pulled away from the market were the 2001 Enron default on their CP obligations and the recent 2008 financial crisis when the ABCP market collapsed. Both lead to severe contraction in the CP markets but both were distinct in the fact that Enron had been a non financial CP market distortion and the recent crisis was due to the ABCP which is part of the financial CP market. So the impact of MMMF holding is significant for both CP markets though the needs and dynamics of operations are different.

We study the impact of MMMFs on both non financial and financial firms. A greater focus has been placed on non financial paper as even though it's a fraction of the financial CP market but is of importance to large nonfinancial firms in the economy. And the learning form these markets are important to adapt and develop short term capital markets in Asia to aid the unprecedented growth of those economies.

Figure 8.1

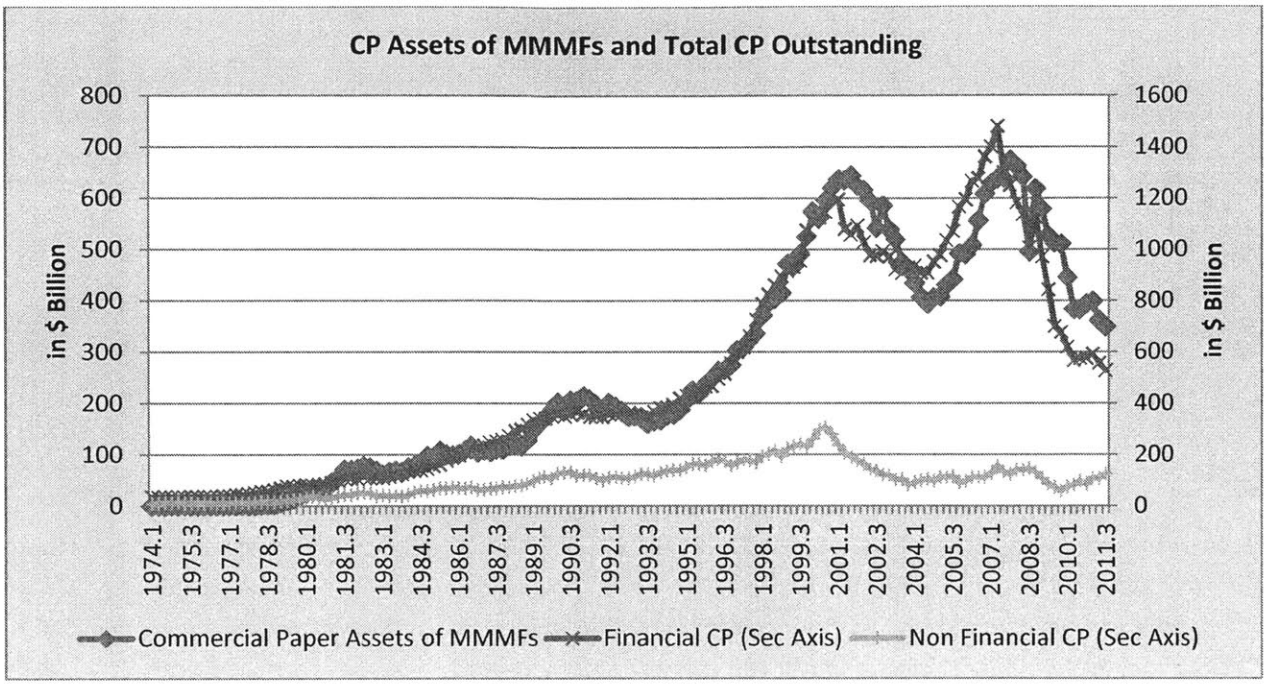
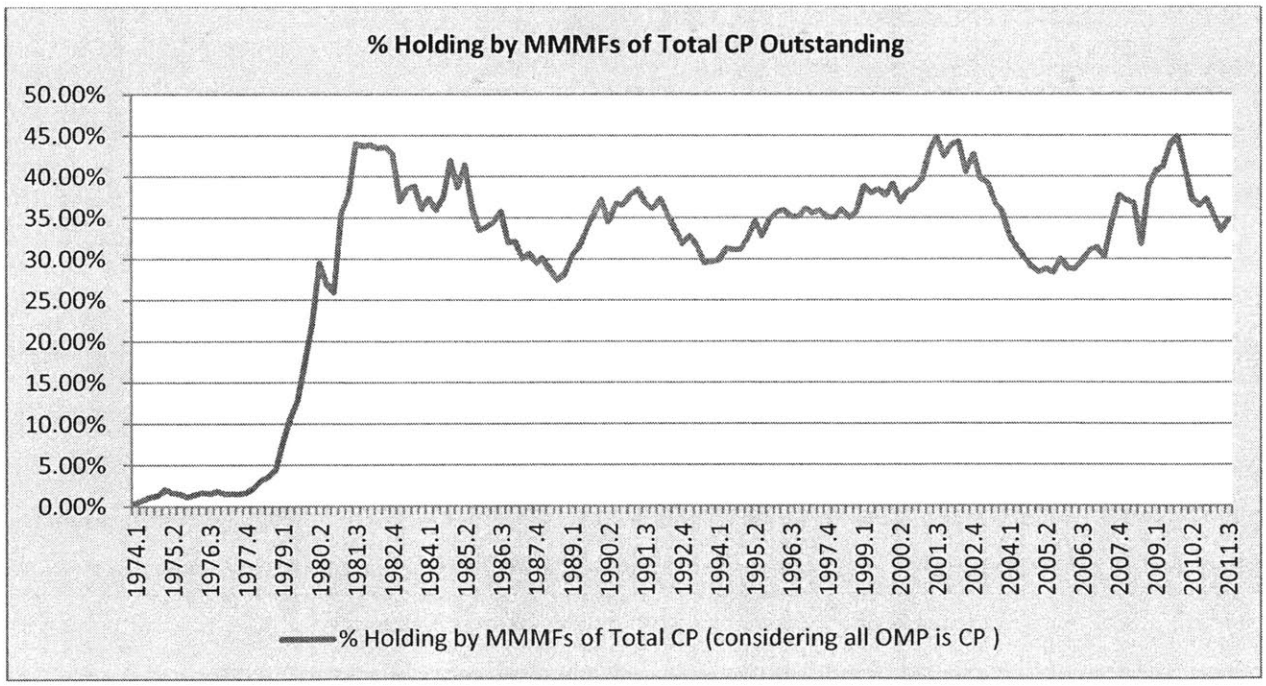
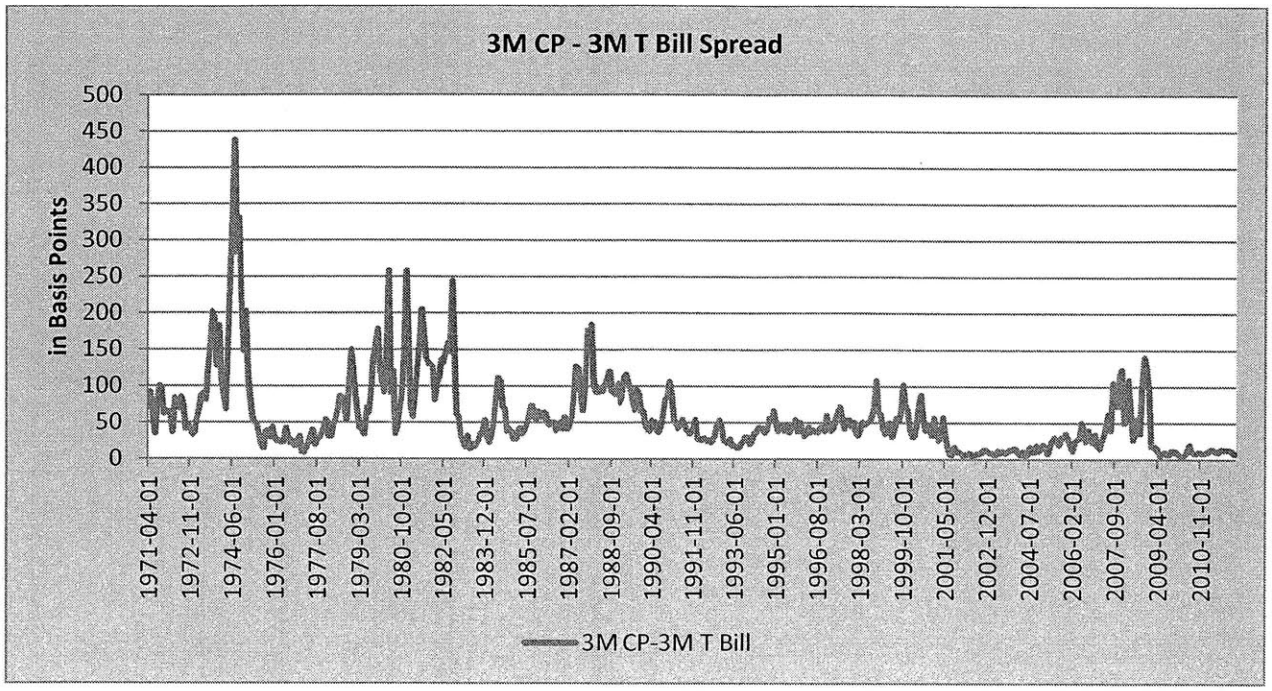


Figure 8.2



Source: Table L-121,208, US Flow of Funds (Federal Reserve) & author's calculations

Figure 9



Source: Table H-15, Federal Reserve

Increase in CP access and usage

MMMFs importance to Non Financial Firms' CP

Though the volume of Non Financial CP is significantly smaller compared to the Financial CP but the importance of these markets can't be overlooked. 'On average, CP issuers account for 32.1% of all Compustat firms' market capitalization, 25.3% of their sales, and 26.7% of their investment. Borrowing amounts in the CP market represent, on average, 95% of the investment outlays per firm-year (the median is 36%).' (Kahl, 2008) The growth in use of CP by non financial firms to fund their short term liability has shown a significant upward trend with the development of MMMFs. (Figure 10.1) The easier access to investors and greater availability of capital via MMMFs can be some of the reasons for the growth. There has also been an increase in absolute levels of CP liability outstanding with non financial firms. (Figure 10.1) Both these empirical results indicate the importance of MMMFs in vitalizing the CP markets. Parallel growth in non financial firms holding CPs as assets has also grown post late 1970s. (Figure 10.2) There is also capital being invested by non financial firms in MMMFs as these are safe and liquid investments for their excess capital. (Figure 10.2) Thus MMMFs have been beneficial to non financial firms both on the liability side and on the asset side of their balance sheet.

Figure 10.1

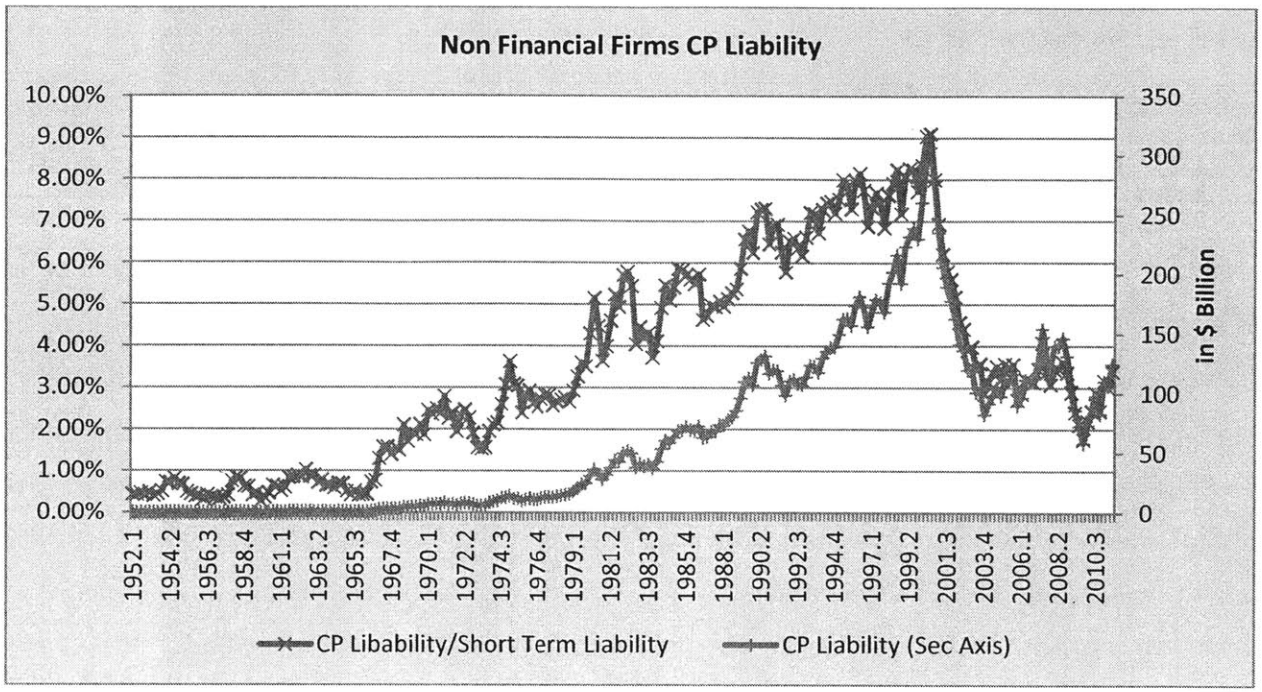
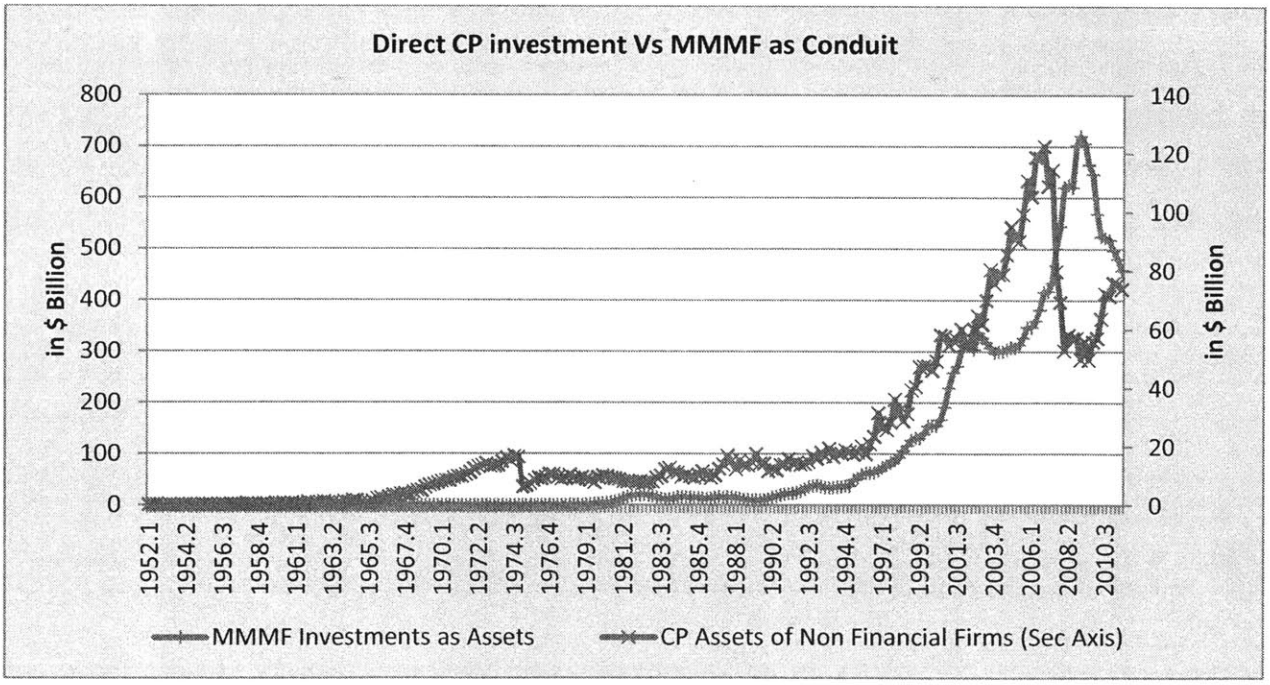


Figure 10.2



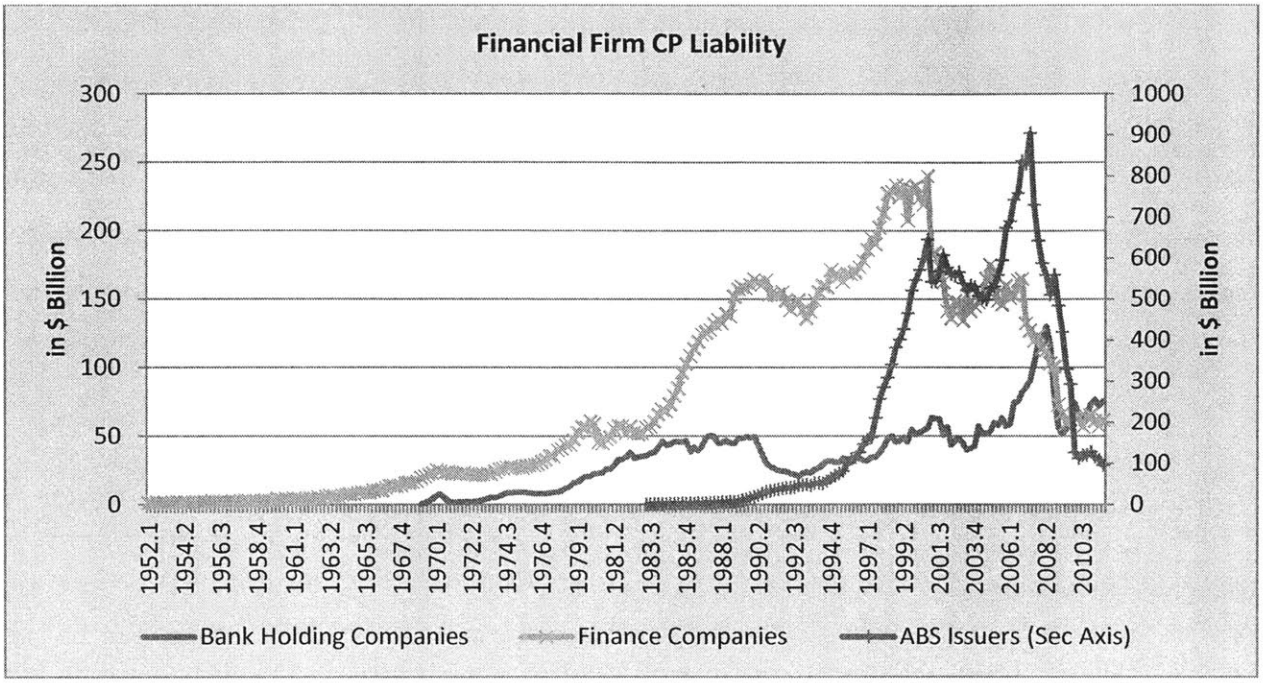
Source: Table L-102, US Flow of Funds (Federal Reserve) & author's calculations

MMMF as a Conduit for investments

MMMF and Financial Firms' CP

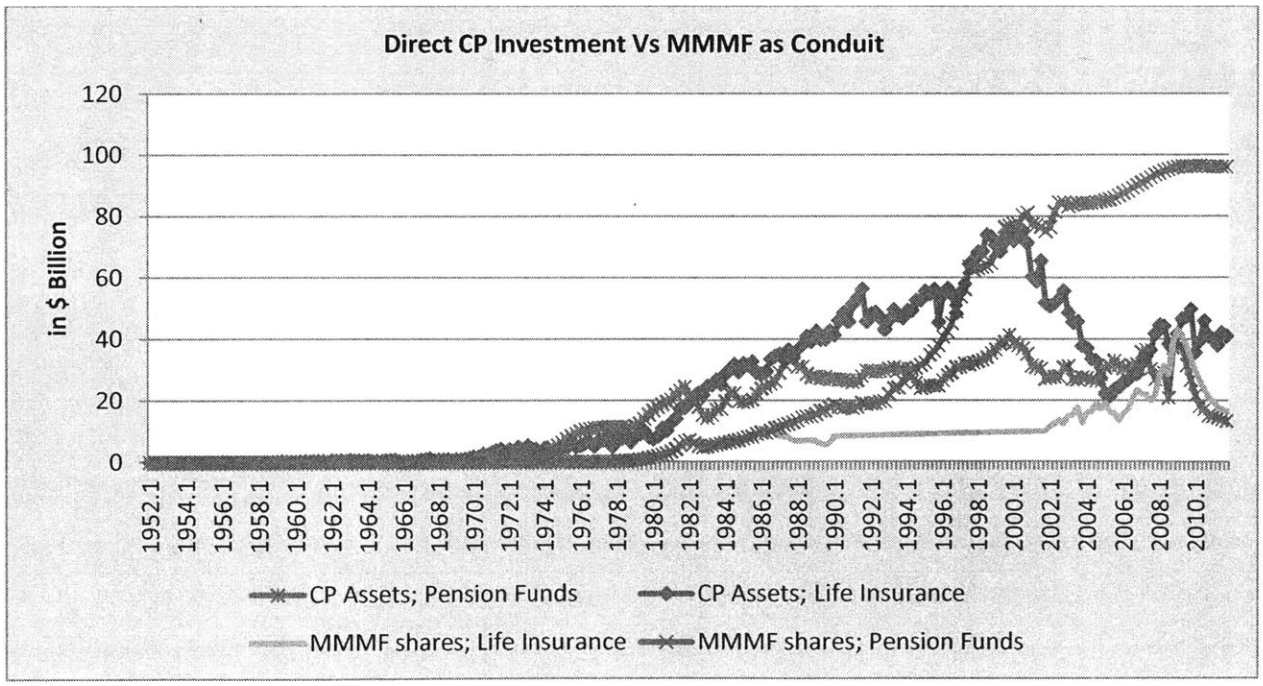
Financial CP forms more than 90% of the commercial paper market. Most of the issuers are financial institutions that use CP as a short term funding to finance their long term assets thus doing maturity transformations. (Figure 11.1) ABCP has been a new innovation which had significantly increased the volumes in the market. The recent crisis and the collapse of the asset backed market have pegged back the volumes but they are still an important part of the money market structure. The issuers of financial CPs are generally bank holding firms, finance companies, Asset backed security issuers and similar financial institutions. The major investors are MMMFs who have close to 40% of CP market securities on their balance sheets. (Figure 8.1, 8.2) They also provide capital by financing repos for the financial firms and thus are a vital player in the 'Shadow Banking' market. So the overall impact of MMMFs in the financial money markets is very important as was also evinced in the liquidity crisis following the Lehman fall out. They are the vital lubricant to the entire financial system in the markets. MMMFs are also a conduit for financial firms like pension funds and insurance companies to park funds for liquidity. This protects them from taking risks in the short term market on various instruments. This is also beneficial for managing redemption liquidity for these institutions as the secondary market for CPs is not liquid and hence direct investment does not provide the same benefits as investing with MMMFs, from which funds can be withdrawn at will. This can specially be seen for pension funds, and to a lesser extent in life insurance firms, their investments via the MMMF conduit have grown especially since early 2000 while their direct investment in CPs has been stable or declined. (Figure 11.2)

Figure 11.1



Source: Table L-112,126,127, US Flow of Funds (Federal Reserve)

Figure 11.2



Source: Table L-117,118, US Flow of Funds (Federal Reserve)

KEY LEARNING FROM US MARKETS

The MMMFs can be seen as a critical factor in the depth and liquidity of CP markets in the US. The MMMFs have increased access to money markets for both borrowers and investors. Specifically in the CP market we can see MMMF behavior as indicator of safety in the market as they seem to be very sensitive to market shocks and withdraw immediately in times of crisis. The cost of issuance of CP and the volatility of spreads to the T-Bills also seems to have reduced gradually with the growth in MMMF holdings of CPs. CP is a restricted market as credit quality plays a critical role but for firms having access it is a large source of short term funding. Hence the MMMFs have played a key role in channelizing the capital to markets and make it many to many thereby spreading risks and increasing efficiency. Thus the developing markets should try and study the US money fund structures and adapt best practices to enhance their own short term fund markets.

KOREA MONEY MARKETS

Korea has a one of the most advanced and active money markets in Asia. The size of the market is small compared to developed countries in US and Europe but it has many of the instruments of the money markets and participation form varied market participants. Money markets in Korea started in 1960s with monetary stabilization bonds and treasury bills. (Asian Money Markets, Pg 161) Currently instruments like CPs, CDs, Repos, Banker's Acceptance, Call money are all available.

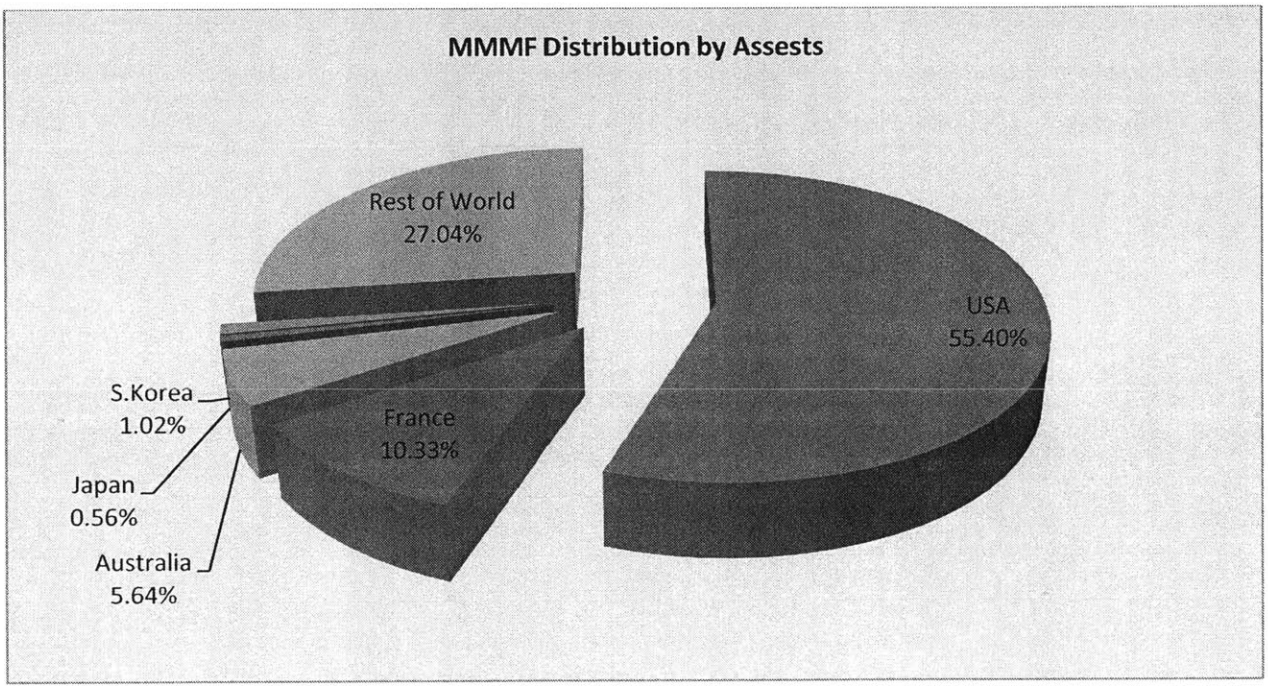
Commercial Paper, introduced in 1972, was the most dominant component of the money markets in the 1980's and formed close to 80% of the market. (Asian Money Markets, Table 4.2 Pg 164) An important feature of the CP market was that interest rates on CPs were fixed by the central bank till 1988 and hence was an extremely regulated market. There have been a multitude of reforms starting from the mid 80s to improve the CP markets. The CP markets grew at an average of 33% from 1976-1997, faster than the bank loan market in Korea. (Korea Short Term Financing, Economist Feb 2011) Credit rating of issuances was started in 1985 and in 1994 multiple rating systems got introduced for CP and corporate bonds and the opening up of Short term money funds in the mid 90s which were targeted to give impetus to the broader money markets. Korea is the biggest Money fund market in Asia, having about 21% share in the local Korean fund market. (Figure 12.1) Though it is just 2% of the global money fund industry, a fraction in comparison to the size of the US (57%) but as a window to the region it's important. (Figure 12.1, 12.2)

Figure 12.1

MMF/(MMF+EQ+Bond+...) as Percentage							
	2005	2006	2007	2008	2009	2010	2011
USA	22.91%	22.61%	25.85%	39.91%	29.82%	23.72%	23.79%
France	32.94%	31.95%	31.81%	42.65%	38.39%	32.60%	33.61%
China			3.51%	20.63%	9.97%	6.36%	6.20%
India	35.43%	37.94%	26.25%	22.77%	13.21%	17.80%	25.69%
Japan	5.46%	3.91%	3.66%	5.01%	4.00%	3.50%	3.57%
Korea	32.26%	24.96%	15.49%	32.41%	23.52%	22.55%	21.70%

Source: Investment Company Institute & Author's Calculations

Figure 12.2



Source: Investment Company Institute & Author's Calculations

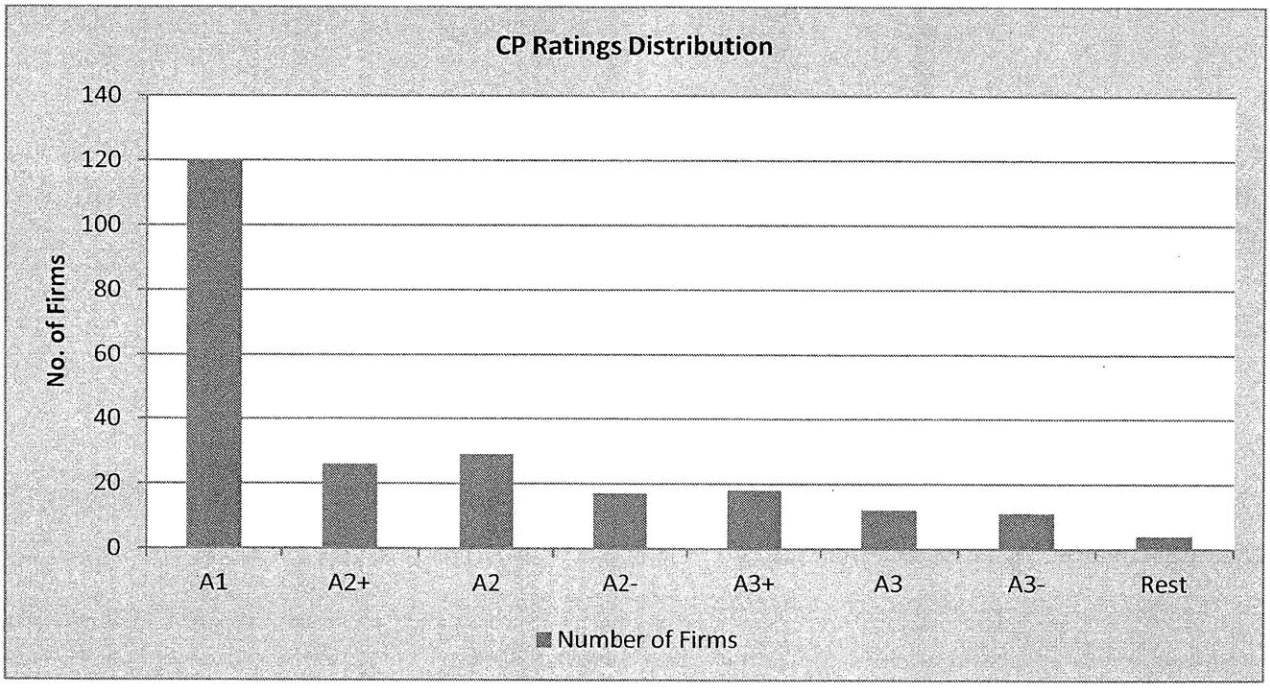
Commercial Paper Markets in Korea

Commercial Paper issuers have traditional been the large Korean firms with strong credit ratings. The non financial firms dominate the issuance of CPs in Korea unlike the US. (Figure 14.1) But majority of the CP issuances are placed via the financial firms like merchant banks or securities firms. The use of CP by non financial firms as a percentage of short term financing is significant. (Figure 14.2) One of the reasons for the ease of access to short term capital via CP might be due to the very high credit worthiness and trust brought about by the *Chaebol* or traditional family holding companies. The concentration till date

of CP issuances is a unique feature of the market. There just a total of 43 broad groups of issuers in the bond and CP markets in Korea. Most of these are the traditional family firms and have significant market share and influence. Of a total of 1736 firms listed in the Korean markets just 350 had access to the CP markets. (Mitsui, 2011) A study of the ratings data of Korea ratings as of 04/05/2012 shows 237 rated CP issuing firms out of a total of 1820 listed firms in South Korea. Only 21 of the 237 are financial firms. A snapshot of the credit quality of CPs available can be seen from the ratings data. (Figure 13) The distribution of credit ratings is highly skewed towards A1/A2 which supports the fact that globally CP markets are very sensitive to quality of issuances.

The investors in CP are mostly financial firms. They hold close to 87% of the volume outstanding of CP. Non financial firms hold close to 11% of the CP issued. (Figure 14.3) The cost of issuance of CPs has also stabilized post the crisis in the late 90s. (Figure 15)

Figure 13



Source: Computed from Korea Ratings Statistical Release

Figure 14.1

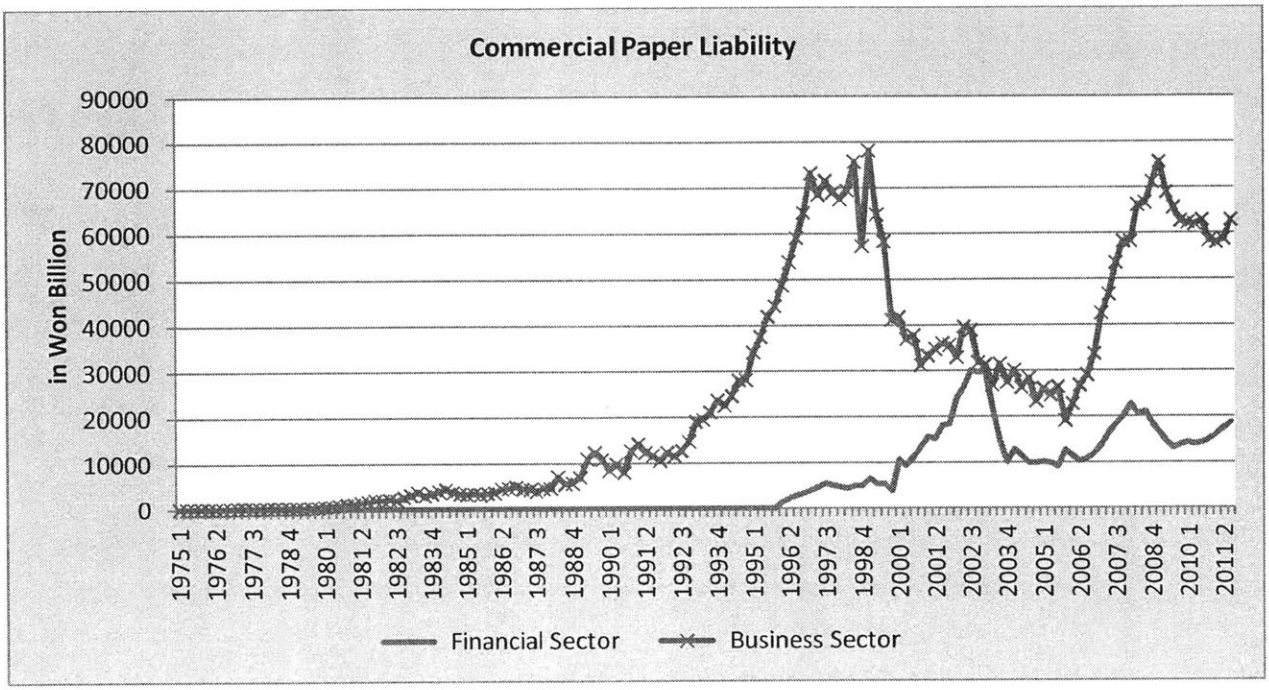


Figure 14.2

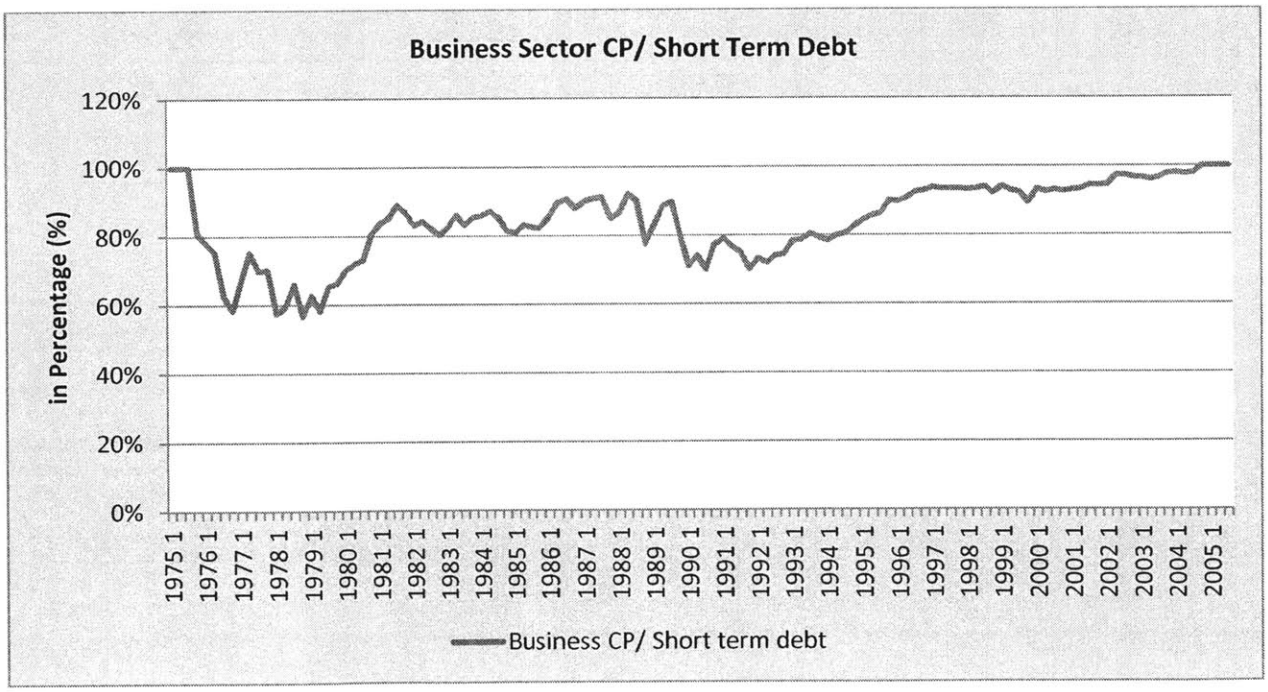
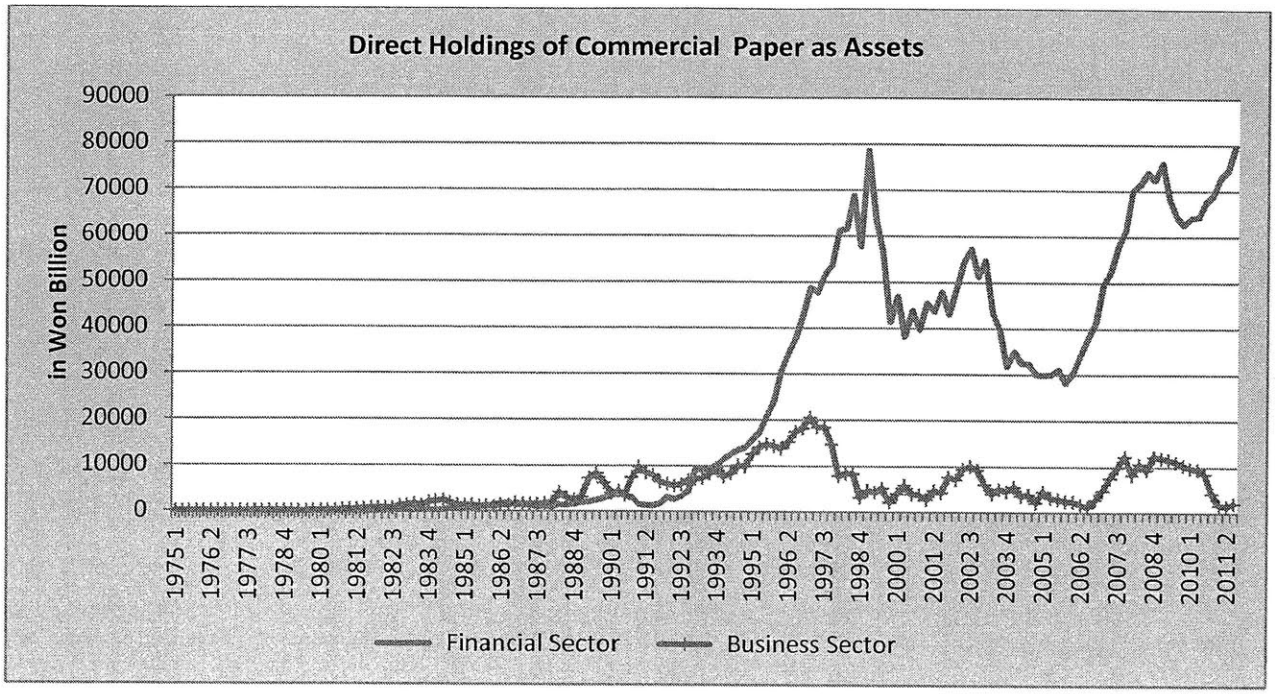
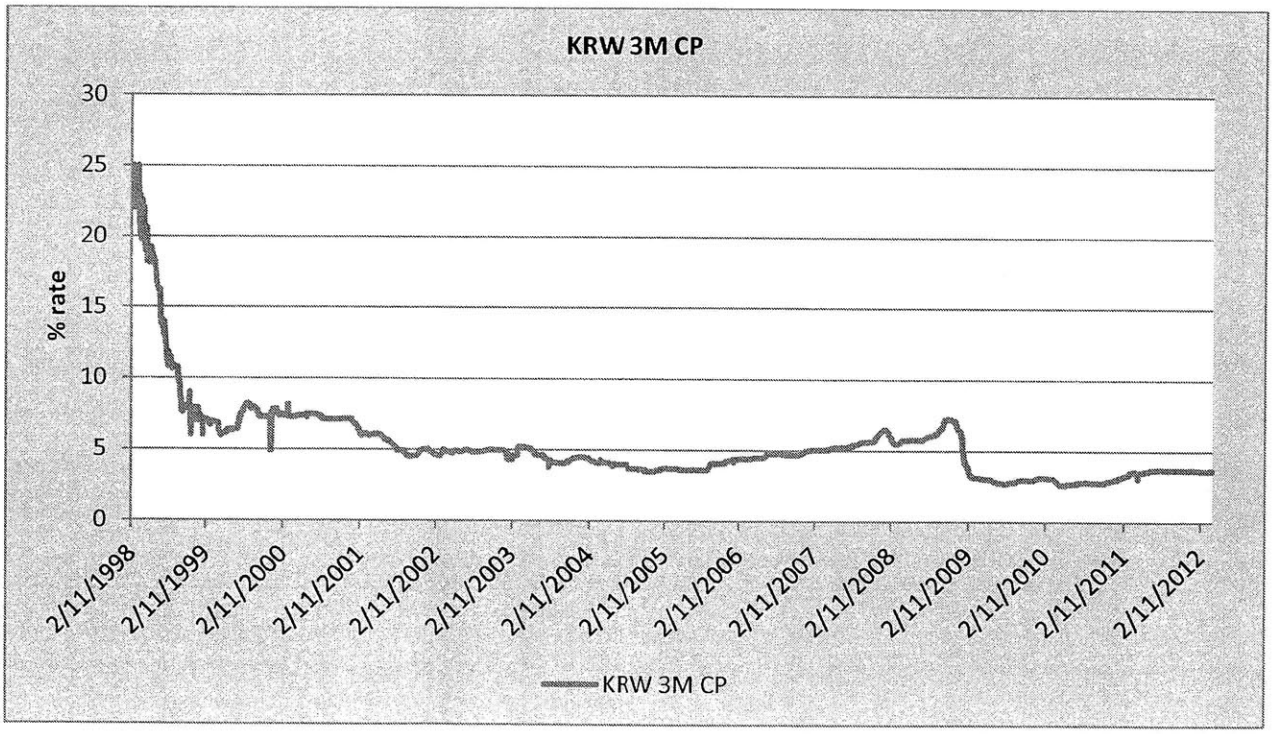


Figure 14.3



Source: Table-11, Flow of Funds, Bank of Korea & author's calculations

Figure 15

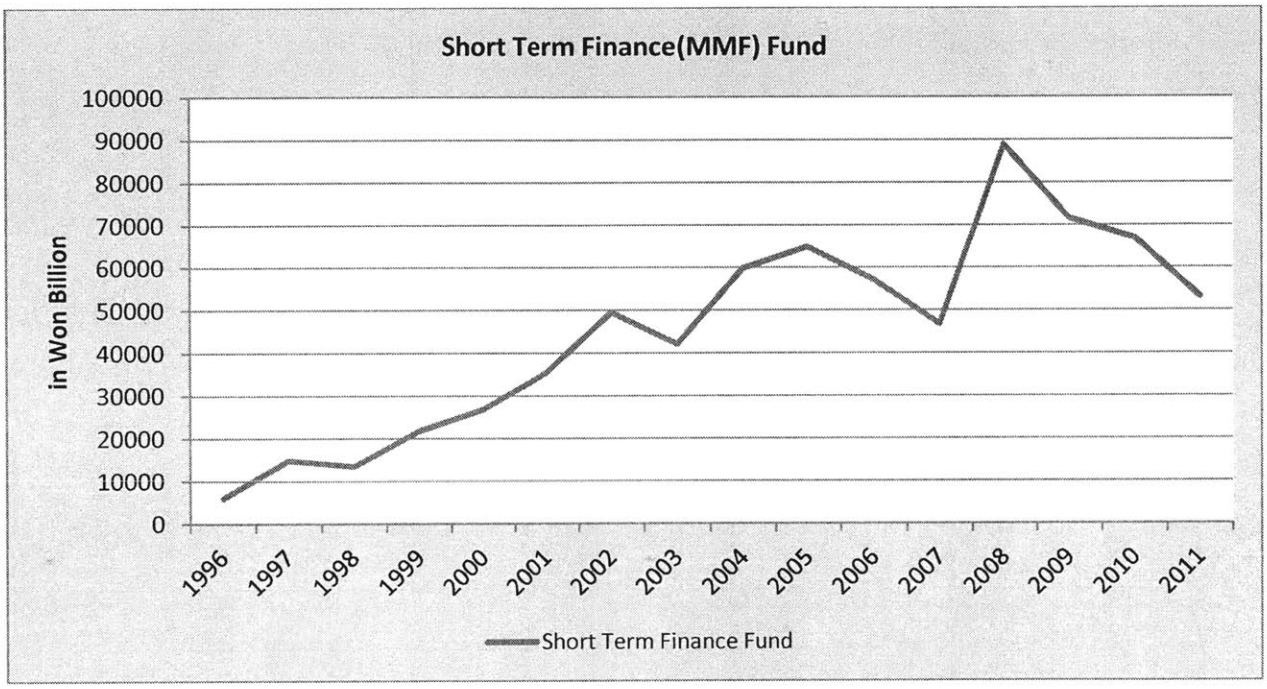


Source: Bloomberg, KWCOC

ROLE OF MONEY MARKET FUNDS IN CP MARKETS IN KOREA

The money market fund industry started in mid 90s in Korea with the onset of financial deregulation and reforms. The investments were primarily in high quality CP as there was little trust on local credit agencies. From 1995 to current date there has been impressive growth in the industry with few setbacks during the 2001 crisis in Korea and the global financial crisis in 2008. (Figure 16)

Figure 16



Source: KOFIA

Korean capital markets had been very restricted in terms of allowing banks to set up shop in Korea. The financing environment was restricted to few big Korean banks and a few foreign banks which were allowed post a period of financial deregulation. As a result of these policies, until the late 1980s corporate capital sourced through bank loans exceeded equity, bonds, and commercial paper combined, and indirect finance from all sources was the primary form of corporate finance until 1991(Cho 2002, table 4). To establish money markets, ceilings on CP issuance were expanded in 1984. Commercial paper post introduction was restricted to the big firms and was completely placed by Korean banks with little access to other financial firms or cross holding across businesses. With the opening of MMFs in 1996 and with foreigner investors being allowed to invest in MMF assets from 1998 we see the significant

growth of MMFs investing both in corporate and financial paper. The growth of CP as a fraction of MMF asset has been growing. (Figure 17.1) There had been setbacks to the Korean markets post the crash in 2001 but with the pickup in 2004 we see that CP holdings of MMFs are increasing. The rapid increase in CP both as liability for non financial firms and as assets by financial firms has seen a steady increase post 2004. The MMFs have contributed in bringing capital to the money market and investing in commercial papers. Regulatory reforms about holding of security and participation of various investors has given a boost to the market. Thus there seems to be an influence of MMFs on the CP markets in Korea.

Figure 17.1

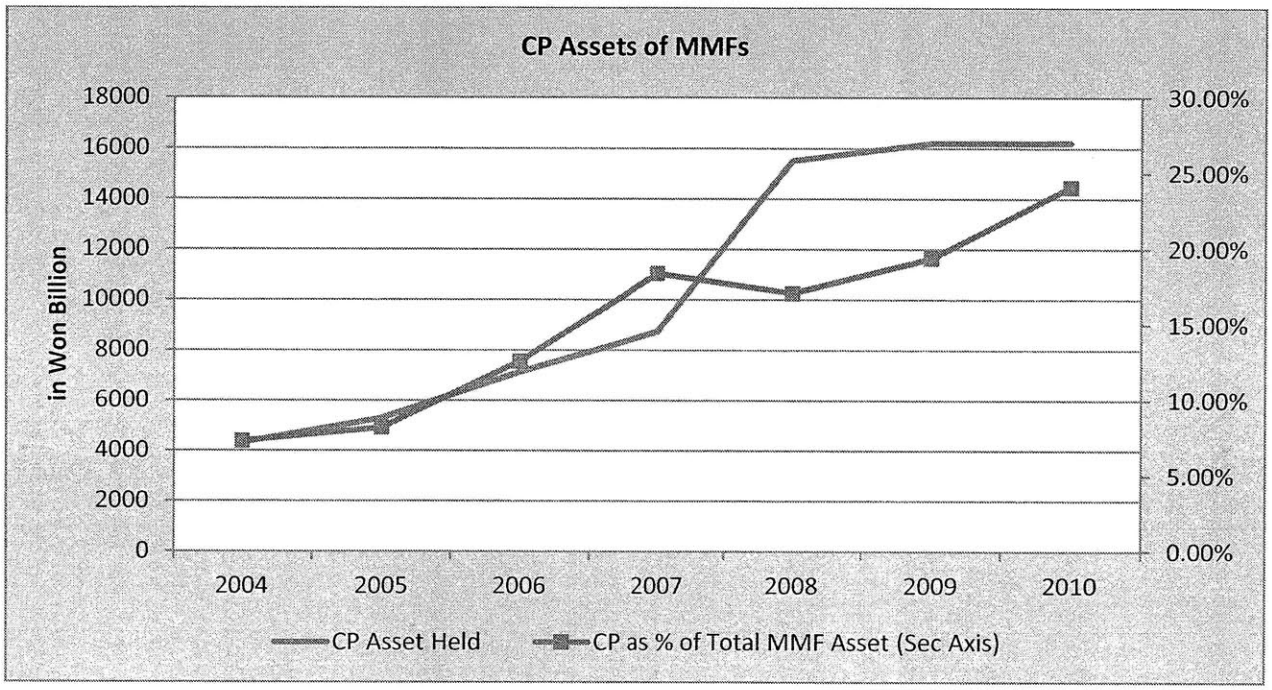


Figure 17.2

Money Market Instruments as % of Total MMF Assets						
Year	Equity	Bond	CP	Deposit	Call Loan	Others
2004	0.20%	44.30%	7.30%	11.80%	11.00%	25.40%
2005	0.10%	31.00%	8.20%	16.20%	17.60%	26.80%
2006	0.30%	39.00%	12.60%	14.50%	12.10%	21.50%
2007	0.20%	22.70%	18.40%	20.60%	6.80%	31.30%
2008	0.00%	21.20%	17.10%	34.80%	6.30%	20.60%
2009	0.00%	32.60%	19.40%	24.00%	5.80%	18.10%
2010	0.00%	39.40%	24.10%	21.30%	3.10%	12.30%

Source: Table 13-13, Korea Capital Markets 2011, KOFIA

CONCLUSIONS

The main conclusion for the empirical study done for both the US and South Korea indicates a strong influence of MMMFs on growth in volumes and depth of commercial paper markets. They also indicate a more diversified holding of CP in the markets especially in Korea post the setup of MMMFs in the markets. It opens up investments by market participants in CPs primarily via MMMFs as a conduit. Access to CP markets as a source of short term funding also improves as can be seen very clearly in the US, more so in the case of non financial firms. In Korea the access has not yet increased to a major part of the market, as they have traditionally been dominated by few large business houses that have access to most of the market and use them heavily for their short term capital needs. MMMFs holding pattern of CPs also serves as an indicator of market confidence prior to downturns. They are most responsive to perceived risk and pull away from CPs rapidly, if fearful about market conditions.

Thus there is significant evidence to support the establishment and growth of MMMFs in Asian countries, to increase the depth, liquidity and access to CP markets for both financial and non financial firms. The market structure needs to be tailored to the dynamics of the region and supported by appropriate regulations to enhance investor access. This would channelize much of the untapped capital to markets thereby enhancing liquidity and serve as a cushion in times of crisis.

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